Validated By CRFValidator v 1.0.3

Application No: 10550528 Version No: 1.0

Input Set:

Output Set:

Started: 2007-10-19 14:05:53.815
Finished: 2007-10-19 14:05:54.961
Elapsed: 0 hr(s) 0 min(s) 1 sec(s) 146 ms
Total Warnings: 7
Total Errors: 0
No. of SeqIDs Defined: 14
Actual SeqID Count: 14

Error code		Error Description
W	213	Artificial or Unknown found in <213> in SEQ ID (3)
W	213	Artificial or Unknown found in <213> in SEQ ID (4)
W	213	Artificial or Unknown found in <213> in SEQ ID (5)
W	213	Artificial or Unknown found in <213> in SEQ ID (6)
W	213	Artificial or Unknown found in <213> in SEQ ID (7)
W	213	Artificial or Unknown found in <213> in SEQ ID (8)
W	213	Artificial or Unknown found in <213> in SEQ ID (9)

SEQUENCE LISTING

<110> Hirota, Naohiko
Kaneko, Takafumi
Kuroda, Hisao
Kaneda, Hirotaka
Takoi, Kiyoshi
Takeda, Kazuyoshi

<120> Barley Lipoxygenase-1 gene, method of selecting barley variety, material for malt alcoholic drinks and process for producing malt alcoholic drink.

<130> 278432US0PCT

<140> 10550528
<141> 2007-10-19

<150> PCT/JP04/04217
<151> 2004-03-25

<150> JP 2003-083924
<151> 2003-03-25

<160> 14

<170> PatentIn version 3.4

<210> 1
<211> 240
<212> DNA
<213> Hordeum vulgare

<400> 1
ctcgccaagg cctacgtcgc cgtcaatgac tccgggtggc accagctcgt cagccactgg 60

tacgttctcc acggtcgatg tgattcagtc agtcgatgca caacaactga tcgaaatatg 120

attgattgaa acgcgcaggc tgaacactca cgcggtgatg gagccgttcg tgatctcgac 180

gaaccggcac cttagcgtga cgcacccggt gcacaagctg ctgagcccgc actaccgcga 240

<210> 2
<211> 240
<212> DNA
<213> Hordeum vulgare

<400> 2
ctcgccaagg cctacgtcgc cgtcaatgac tccgggtggc accagctcgt cagccactga 60

tacgttctcc acggtcgatg tgattcagtc agtcgatgca caacaactga tcgaaatatg 120

attgattgaa acgcgcaggc tgaacactca cgcggtgatg gagccgttcg tgatctcgac 180

gaaccggcac cttagcgtga cgcacccggt gcacaagctg ctgagcccgc actaccgcga 240

<210> 3
<211> 24
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 3
ggagaggagg ccaagaacaa gatg 24

<210> 4
<211> 19
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 4
ggttgccgat ggcttagat 19

<210> 5
<211> 21
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 5
cacgtcgccg tccgatccat c 21

<210> 6
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 6
ccatcacgca gggcatcctg 20

<210> 7
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 7
gcgttgatga gcgtctgccg 20

<210> 8
<211> 24
<212> DNA
<213> Artificial

<220>
<223> primer for LOX-1 with BamHI site

<400> 8
ggatccatgc tgctgggagg gctg 24

<210> 9
<211> 25
<212> DNA
<213> Artificial

<220>
<223> primer for LOX-1 with HindIII site

<400> 9
aagcttttag atggagatgc tgttg 25

<210> 10
<211> 2668
<212> DNA
<213> Hordeum vulgare

<400> 10
atgctgctgg gagggctgat cgacaccctc acgggggcga acaagagcgc ccggctcaag 60

ggcacggtgg tgctcatgcg caagaacgtg ctggacctca acgacttcgg cgccaccatc 120

atcgacggca tcggcgagtt cctcggcaag ggcgtcacct gccagcttat cagctccacc 180

gccgtcgacc aagacaacgg cggtcgcggg aaggtgggcg cggaggcgga gctggagcag 240

tgggtgacga gcctgccgtc gctgacgacg ggggagtcca agttcggcct caccttcgac 300

tgggaggtgg agaagctcgg ggtgccgggc gccatcgtcg tcaacaacta ccacagctcc 360

gagttcctgc ttaaaaccat caccctccac gacgtccccg gccgcagcgg caacctcacc 420

ttcgtcgcca actcatggat ctaccccgcc gccaactacc gatacagccg cgtcttcttc 480

gccaacgaca cgtacctgcc gagccagatg ccggcggcgc tgaagccgta ccgcgacgac 540

gagctccgga acctgcgtgg cgacgaccag cagggcccgt accaggagca cgaccgcatc 600

taccgctacg acgtctacaa cgacctcggc gagggccgcc ccatcctcgg cggcaactcc 660

gaccaccctt acccgcgccg cggccgcacg gagcgcaagc ccaacgccag cgacccgagc 720

ctggagagcc ggctgtcgct gctggagcag atctacgtgc cgcgggacga gaagttcggc 780

cacctcaaga cgtccgactt cctgggctac tccatcaagg ccatcacgca gggcatcctg 840

ccggccgtgc gcacctacgt ggacaccacc cccggcgagt tcgactcctt ccaggacatc 900

atcaacctct atgagggcgg catcaagctg cccaaggtgg ccgccctgga ggagctccgt 960

aagcagttcc cgctccagct catcaaggac ctcctccccg tcggcggcga ctccctgctt 1020

aagctccccg tgccccacat catccaggag aacaagcagg cgtggaggac cgacgaggag 1080

ttcgcacggg aggtgctcgc cggcgtcaac ccggtcatga tcacgcgtct cacggagttc 1140

ccgccaaaaa gtagtctgga ccctagcaag tttggtgacc acaccagcac catcacggcg 1200

gagcacatag agaagaacct cgagggcctc acggtgcagc aggcgctgga aagcaacagg 1260

ctgtacatcc ttgatcacca tgaccggttc atgccgttcc tgatcgacgt caacaacctg 1320

cccggcaact tcatctacgc cacgaggacc ctcttcttcc tgcgcggcga cggcaggctc 1380

acgccgctcg ccatcgagct gagcgagccc atcatccagg gcggccttac cacggccaag 1440

agcaaggttt acacgccggt gcccagcggc tccgtcgaag gctgggtgtg ggagctcgcc 1500

aaggcctacg tcgccgtcaa tgactccggg tggcaccagc tcgtcagcca ctgatacgtt 1560

ctccacggtc gatgtgattc agtcagtcga tgcacaacaa ctgatcgaaa tatgattgat 1620

tgaaacgcgc aggctgaaca ctcacgcggt gatggagccg ttcgtgatct cgacgaaccg 1680

gcaccttagc gtgacgcacc cggtgcacaa gctgctgagc ccgcactacc gcgacaccat 1740

gaccatcaac gcgctggcgc ggcagacgct catcaacgcc ggcggcatct tcgagatgac 1800

ggtgttcccg ggcaagttcg cgttggggat gtcggccgtg gtgtacaagg actggaagtt 1860

caccgagcag ggactgccgg acgatctcat caagaggggc atggcggtgg aggacccgtc 1920

gagcccgtac aaggtgcggt tgctggtgtc ggactacccg tacgcggcgg acgggctggc 1980

gatctggcac gccattgagc agtacgtgag cgagtacctg gccatctact acccgaacga 2040

cggcgtgctg cagggcgata cggaggtgca ggcgtggtgg aaggagacgc gcgaggtcgg 2100

gcacggcgac ctcaaggacg ccccatggtg gcccaagatg caaagtgtgc cggagctggc 2160

caaggcgtgc accaccatca tctggatcgg gtcggcgctg catgcggcag tcaacttcgg 2220

gcagtacccc tacgcggggt tcctcccgaa ccggccgacg gtgagccggc gccgcatgcc 2280

ggagcccggc acggaggagt acgcggagct ggagcgcgac ccggagcggg ccttcatcca 2340

caccatcacg agccagatcc agaccatcat cggcgtgtcg ctgctggagg tgctgtcgaa 2400

gcactcctcc gacgagctgt acctcgggca gcgggacacg ccggagtgga cctcggaccc 2460

aaaggccctg gaggtgttca agcggttcag cgaccggctg gtggagatcg agagcaaggt 2520

ggtgggcatg aaccatgacc cggagctcaa gaaccgcaac ggcccggcta agtttcccta 2580

catgctgctc taccccaaca cctccgacca caagggcgcc gctgccgggc ttaccgccaa 2640

gggcatcccc aacagcatct ccatctaa 2668

<210> 11
<211> 4393
<212> DNA
<213> Hordeum vulgare

<400> 11
cacgtcgccg tccgatccat ctctccaaag ccgagcgcca caccaccggg accggacccg 60

gaccggccta taaattgccc ggaccgagct gcaagcagct cctcacacac actcacgcaa 120

cacacatcca tcttcactga aaagtgaaaa acagtgtgct ggtgccattg gttggagcag 180

tgaaagcgag gagaggaggc caagaacaag atgctgctgg gagggctgat cgacaccctc 240

acgggggcga acaagagcgc ccggctcaag ggcacggtgg tgctcatgcg caagaacgtg 300

ctggacctca acgacttcgg cgccaccatc atcgacggca tcggcgagtt cctcggcaag 360

ggcgtcacct gccagcttat cagctccacc gccgtcgacc aaggtaatca ctaccctcct 420

ccggccttct cctctgttta caagatatag tatttctttc gtgtgggccg gcggccatgg 480

atggatggat gtgtctggat cggctaaaga agataggata gctagccctg gccggtcgtc 540

tttacctgag catgggcata tgccatcgaa aaaagagaca acagcatgca tgcatggtgc 600

gcgcaccaga ccacgcagag caccggatgc tcgagacaaa gcaacacaac aagcaaggac 660

gacacgtcaa aagcaacaca acaagcaagg acggcacgtc aaaagcaaca caaacctaaa 720

ctaaagcaca aagacgtaag agcaagcaca caatcagcag gctataaaca gttgtcatca 780

aaaacaacgc tggaagagag agagaaggaa ggaagtagta gccatgaaaa attaaatcac 840

cgggcgttgc tctttgccca acaattaatc aagcagggta cgtggcatgt atagttcttg 900

taagtaaact aagcatgtga tatgagaagg tacgtggtgg tgcagacaac ggcggtcgcg 960

ggaaggtggg cgcggaggcg gagctggagc agtgggtgac gagcctgccg tcgctgacga 1020

cgggggagtc caagttcggc ctcaccttcg actgggaggt ggagaagctc ggggtgccgg 1080

gcgccatcgt cgtcaacaac taccacagct ccgagttcct gcttaaaacc atcaccctcc 1140

acgacgtccc cggccgcagc ggcaacctca ccttcgtcgc caactcatgg atctaccccg 1200

ccgccaacta ccgatacagc cgcgtcttct tcgccaacga cgtgcgtgga ttttcctcta 1260

ctttcctctc ctttcatttt caccgccttc gtcattcatg gtcgatcatt aagtcttgcc 1320

aggacaatag atgatgagct aggagtggtt accacttagc agtacgtaca ttatttattc 1380

cgtgttggta gaaaaggata tggtttggtg cagatcgaca caagattgaa tgaaagttgc 1440

accgtggcac cgtggcagcg tggtaggtga aaataactgt tgcacggatc cacccacatg 1500

attgttttca tgaataaact ttttaaggat gtgtctagcc acatctagat gcatgtcaca 1560

taattattgc ataccaaaac gattaaatta agcataaaaa gaaaaggaaa aaaatactca 1620

catatctcga cgtaagatca atgatatagt atttagatat gcaatattta tcttacatct 1680

aaacctttct tcattcctaa atataagaca tttgtaagat ttcactatgg acaacatacg 1740

aaacaaaatc agtggatctc tctatgcatt cattatgtag tctataataa aatctttaaa 1800

agatcgtata ttttgcaacg gagggagtaa aacataactt tttaatagta atgttgcacg 1860

gctccacact cgcagacgta cctgccgagc cagatgccgg cggcgctgaa gccgtaccgc 1920

gacgacgagc tccggaacct gcgtggcgac gaccagcagg gcccgtacca ggagcacgac 1980

cgcatctacc gctacgacgt ctacaacgac ctcggcgagg gccgccccat cctcggcggc 2040

aactccgacc acccttaccc gcgccgcggc cgcacggagc gcaagcccaa cgccagcgac 2100

ccgagcctgg agagccggct gtcgctgctg gagcagatct acgtgccgcg ggacgagaag 2160

ttcggccacc tcaagacgtc cgacttcctg ggctactcca tcaaggccat cacgcagggc 2220

atcctgccgg ccgtgcgcac ctacgtggac accacccccg gcgagttcga ctccttccag 2280

gacatcatca acctctatga gggcggcatc aagctgccca aggtggccgc cctggaggag 2340

ctccgtaagc agttcccgct ccagctcatc aaggacctcc tccccgtcgg cggcgactcc 2400

ctgcttaagc tccccgtgcc ccacatcatc caggagaaca agcaggcgtg gaggaccgac 2460

gaggagttcg cacgggaggt gctcgccggc gtcaacccgg tcatgatcac gcgtctcacg 2520

gtgagtcagc gattatttgt tcattgtgtg tgtatggtgt ccatggtgag aaagtgcaga 2580

tcttgatttg cgttgggtcg catgcacgca tgctgcatgc atgcaggagt tcccgccaaa 2640

aagtagtctg gaccctagca agtttggtga ccacaccagc accatcacgg cggagcacat 2700

agagaagaac ctcgagggcc tcacggtgca gcaggtaatt ggtccaagcc atcgacatca 2760

actatgattt acctaggagt aattggtagc tgtagataat ttggcttcgt tgcaattaat 2820

ttgatgctgg ccgatcaagt gatcgtattg ggtttgaaat ttgcaggcgc tggaaagcaa 2880

caggctgtac atccttgatc accatgaccg gttcatgccg ttcctgatcg acgtcaacaa 2940

cctgcccggc aacttcatct acgccacgag gaccctcttc ttcctgcgcg gcgacggcag 3000

gctcacgccg ctcgccatcg agctgagcga gcccatcatc cagggcggcc ttaccacggc 3060

caagagcaag gtttacacgc cggtgcccag cggctccgtc gaaggctggg tgtgggagct 3120

cgccaaggcc tacgtcgccg tcaatgactc cgggtggcac cagctcgtca gccactgata 3180

cgttctccac ggtcgatgtg attcagtcag tcgatgcaca acaactgatc gaaatatgat 3240

tgattgaaac gcgcaggctg aacactcacg cggtgatgga gccgttcgtg atctcgacga 3300

accggcacct tagcgtgacg cacccggtgc acaagctgct gagcccgcac taccgcgaca 3360

ccatgaccat caacgcgctg gcgcggcaga cgctcatcaa cgccggcggc atcttcgaga 3420

tgacggtgtt cccgggcaag ttcgcgttgg ggatgtcggc cgtggtgtac aaggactgga 3480

agttcaccga gcagggactg ccggacgatc tcatcaagag gtacgtacct ggtaaatgtt 3540

atgaatgtgt aaaacaaatt gggcgtctcg ctcactgaca ggaacgtggt aaaaaaaatg 3600

caggggcatg gcggtggagg acccgtcgag cccgtacaag gtgcggttgc tggtgtcgga 3660

ctacccgtac gcggcggacg ggctggcgat ctggcacgcc attgagcagt acgtgagcga 3720

gtacctggcc atctactacc cgaacgacgg cgtgctgcag ggcgatacgg aggtgcaggc 3780

gtggtggaag gagacgcgcg aggtcgggca cggcgacctc aaggacgccc catggtggcc 3840

caagatgcaa agtgtgccgg agctggccaa ggcgtgcacc accatcatct ggatcgggtc 3900

ggcgctgcat gcggcagtca acttcgggca gtacccctac gcggggttcc tcccgaaccg 3960

gccgacggtg agccggcgcc gcatgccgga gcccggcacg gaggagtacg cggagctgga 4020

gcgcgacccg gagcgggcct tcatccacac catcacgagc cagatccaga ccatcatcgg 4080

cgtgtcgctg ctggaggtgc tgtcgaagca ctcctccgac gagctgtacc tcgggcagcg 4140

ggacacgccg gagtggacct cggacccaaa ggccctggag gtgttcaagc ggttcagcga 4200

ccggctggtg gagatcgaga gcaaggtggt gggcatgaac catgacccgg agctcaagaa 4260

ccgcaacggc ccggctaagt ttccctacat gctgctctac cccaacacct ccgaccacaa 4320

gggcgccgct gccgggctta ccgccaaggg catccccaac agcatctcca tctaatttaa 4380

gccatcggca acc 4393

<210> 12
<211> 60
<212> DNA
<213> Hordeum vulgare

<220>
<221> misc_feature
<222> (30)..(30)
<223> G in the authentic LOX-1 gene

<400> 12
tccgggtggc accagctcgt cagccactgg tacgttctcc acggtcgatg tgattcagtc 60

<210> 13
<211> 60
<212> DNA
<213> Hordeum vulgare

<220>
<221> misc_feature
<222> (30)..(30)
<223> A in the mutant LOX-1 gene

<400> 13
tccgggtggc accagctcgt cagccactga tacgttctcc acggtcgatg tgattcagtc 60

<210> 14
<211> 9
<212> PRT
<213> Hordeum vulgare

<400> 14

Ser Gly Trp His Gln Leu Val Ser His
1 5